**IN THE CLAIMS**

Claim 1. (currently amended) A sensor for characterizing a fluid, the sensor comprising a plurality of mechanical resonators having at least two different structures, the plurality of resonators comprising a low frequency tuning fork resonator and a high frequency tuning fork frequency resonator, the plurality of resonators being adapted for measuring physical or chemical properties of the fluid, at least one of the resonators having an operational frequency of less than 1 MHz, wherein the plurality of resonators are excited by a sweep generator.

Claim 2. (previously presented) The sensor of claim 1 wherein the plurality of resonators have different resonance frequencies.

Claim 3. (previously presented) The sensor of claim 2 wherein the plurality of resonators comprise different coatings, functionalities or combinations thereof.

Claim 4. (previously presented) The sensor of claim 3 further comprising at least one additional mechanical resonator.

Claim 5. (cancelled)

Claim 6. (currently amended) The sensor of claim 1 ~~5~~ further comprising a measurement circuit coupled with the resonators, the measurement circuit having a signal generator for generating a variable frequency input signal to cause the resonators to oscillate, and a receiver coupled to the measurement circuit to output a frequency response of the resonators.

Claim 7. (previously presented) The sensor of claim 1 wherein the plurality of resonators further comprise a thickness shear mode resonator.

Claim 8. (cancelled)

Claim 9. (cancelled)

Claim 10. (currently amended) The sensor of claim 3 wherein the plurality of resonators comprises ~~comprise~~ different functionalities, each of the functionalities designed to bond with a different target molecule.

Claim 11. (original) The sensor of claim 3 wherein the plurality of resonators comprise tuning fork resonators functionalized with a polymer layer or other selective absorbing layer to detect the presence of specific molecules in a vapor.

Claim 12. (original) The sensor of claim 3 wherein the plurality of resonators comprise functionalized tuning fork resonators adapted to detect the presence of a specific chemical in a fluid composition.

Claim 13. (original) The sensor of claim 3 wherein the plurality of resonators are tuning fork resonators treated with a functionality that changes the resonance frequency of the tuning fork upon exposure to a selected target chemical.

Claim 14. (original) The sensor of claim 3 wherein the plurality of resonators are tuning fork resonators covered with receptor molecules that bond with specific target molecules.

Claim 15. (original) The sensor of claim 3 wherein the plurality of resonators are tuning fork resonators functionalized with a material that physically changes when exposed to molecules of a selected chemical, such that the mechanical drag on the tuning fork changes upon exposure to the selected chemical.

Claim 16. (original) The sensor of claim 3 wherein the plurality of resonators are tuning fork resonators comprising hydrophobic or hydrophilic functionality.

Claim 17. (cancelled)

Claim 18. (previously presented) The sensor of claim 1 wherein the plurality of resonators are attached together by a common base.

Claim 19. (currently amended) A sensor for characterizing a fluid, the sensor comprising a plurality of mechanical resonators having at least two different structures, the plurality of resonators comprising a low frequency tuning fork resonator and a high frequency tuning fork frequency resonator, the plurality of resonators being adapted for measuring physical or chemical properties of the fluid, at least one of the resonators having an operational frequency of less than 1 MHz ~~The sensor of claim 1~~ wherein the plurality of resonators are attached to multiple frequency generating circuits adapted to measure properties of the fluid compositions over multiple frequency sweeps.

Claim 20. (cancelled)

Claim 21. (cancelled)

Claim 22. (cancelled)

Claim 23. (cancelled)

Claim 24. (previously presented) The sensor of claim 1 wherein the resonators are adapted to operate in multiple mechanical modes.

Claim 25. (previously presented) The sensor of claim 24 wherein the multiple mechanical modes are selected from compression mode, axial mode, torsion mode or combinations thereof.

Claim 26. (previously presented) The sensor of claim 1 wherein tines of at least one of the tuning forks oscillate in opposite phases.

Claim 27. (currently amended) A sensor for characterizing a fluid, the sensor comprising:

a plurality of mechanical resonators, each of the plurality of resonators having an operational frequency of less than 1 MHz, the plurality of resonators being adapted for measuring physical or chemical properties of the fluid, and

a sweep generator for generating a variable frequency input signal to cause the resonators to oscillate,

wherein the plurality of resonators are selected from a low frequency tuning fork resonator, a high frequency tuning fork frequency resonator, a trident tuning fork resonator, a length extension resonator, a torsion resonator, a thickness shear mode resonator, bimorphs, unimorphs, and combinations thereof.

Claim 28. (previously presented) The sensor of claim 27 further comprising a measurement circuit coupled with the resonators, the measurement circuit comprising the sweep generator and a receiver coupled to the measurement circuit to output a frequency response of the resonators.

Claim 29. (previously presented) The sensor of claim 27 wherein the plurality of resonators have different structures, different resonance frequencies or combinations thereof.

Claim 30. (previously presented) The sensor of claim 29 wherein the plurality of resonators comprise different coatings, functionalities or combinations thereof.

Claim 31. (cancelled)

Claim 32. (cancelled)

Claim 33. (cancelled)

Claim 34. (cancelled)

Claim 35. (cancelled)

Claim 36. (cancelled)

Claim 37. (cancelled)

Claim 38. (cancelled)

Claim 39. (cancelled)

Claim 40. (cancelled)